Clean Version of Amended Claims Pursuant to 37 C.F.R. 1.121

1. (Amended) A voltage-controlled tunable filter including:

first and second cavity resonators;

means for exchanging a signal between the first and second cavity resonators;

a first voltage tunable dielectric capacitor positioned within the first cavity resonator, said dielectric capacitor including composite materials in their paraelectric state;

means for applying a control voltage to the first voltage tunable dielectric capacitors;

a second voltage tunable dielectric capacitor positioned within the second cavity resonator, said dielectric capacitor including composite materials in their paraelectric state;

means for applying a control voltage to the second voltage tunable dielectric capacitors;

an input coupled to the first cavity resonator; and

an output coupled to the second cavity resonator.

2. The voltage-controlled tunable filter of claim 1, wherein each of the first and second voltage tunable dielectric capacitors includes:

a first electrode;

a tunable dielectric film positioned on the first electrode; and

a second electrode positioned on a surface of the tunable dielectric film opposite the first electrode.

3. (Amended) The voltage-controlled tunable filter of claim 2, wherein said composite materials are barium strontium titanate or a composite of barium strontium titanate acting in their paraelectric state.

4. (Amended) The voltage-controlled tunable filter of claim 1, further comprising:

a plurality of additional coaxial resonators, electrically coupled in series to said first and second cavity resonators;

means for exchanging a signal between the additional resonators; and

a plurality of additional voltage tunable dielectric capacitors, each of the additional voltage tunable dielectric capacitors being positioned within one of the additional resonators, said additional dielectric capacitors including composite materials in their paraelectric state.

5. The voltage-controlled tunable filter of claim 1, further comprising:

a first rod positioned in the first resonator, wherein the first voltage tunable dielectric capacitor is positioned at one end of the first rod; and

a second rod positioned in the second resonator, wherein the second voltage tunable dielectric capacitor is positioned at one end of the second rod.

6. The voltage-controlled tunable filter of claim 5, wherein:

each of the rods in the cavity resonators is serially connected with one of the voltage tunable dielectric capacitors.

7. The voltage-controlled tunable filter of claim 5, wherein:

each of the rods in the cavity resonators is grounded.

8. The voltage-controlled tunable filter of claim 1, wherein:

the input comprises a first coupling probe; and

the output comprises a second coupling probe.

9. The voltage-controlled tunable filter of claim 1, wherein each of the first and second voltage tunable dielectric capacitors includes:

a substrate;

a tunable dielectric film positioned on the substrate; and

first and second electrodes positioned on a surface of the tunable dielectric film opposite the substrate, the first and second electrodes being separated to form a gap.

10. Cancel

11. (New) A voltage-controlled tunable filter including:

first and second cavity resonators;

means for exchanging a signal between the first and second cavity resonators;

a first voltage tunable dielectric capacitor positioned within the first cavity resonator, said dielectric capacitor including $Ba_xCa_{1-x}TiO_3$, where x is in a range from about 0.2 to about 0.8 and acting in its paraelectric state;

means for applying a control voltage to the first voltage tunable dielectric capacitors;

a second voltage tunable dielectric capacitor positioned within the second cavity resonator, said dielectric capacitor including composite materials in their paraelectric state;

means for applying a control voltage to the second voltage tunable dielectric capacitors;

an input coupled to the first cavity resonator; and

an output coupled to the second cavity resonator.

12. (New) A voltage-controlled tunable filter including:

first and second cavity resonators;

means for exchanging a signal between the first and second cavity resonators;

a first voltage tunable dielectric capacitor positioned within the first cavity resonator, said dielectric capacitor including $Ba_xCa_{1-x}TiO_3$, where x is in a range from about 0.2 to about 0.8 and acting in its paraelectric state;

means for applying a control voltage to the first voltage tunable dielectric capacitors;

a second voltage tunable dielectric capacitor positioned within the second cavity resonator, said dielectric capacitor including composite materials in their paraelectric state;

means for applying a control voltage to the second voltage tunable dielectric capacitors;

an input coupled to the first cavity resonator; and

an output coupled to the second cavity resonator.